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Massimiliano Pavan

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER

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EXAMINER

LEE, DANIEL H.

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/577,350

Applicant(s)

PAVAN ET AL.

Examiner

DANIEL LEE

Art Unit

4122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 49-97 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 49-97 is/are rejected.
7) ☒ Claim(s) 84 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 28 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. The Amendment filed on April 9, 2009 has been entered. Claims 49-97 remain pending in the application. The previous claim objections to claims 49, 74, and 94 are withdrawn in light of Applicant's amendments to claims 49, 73, 74, 94, and 95. The previous double patenting rejections of claims 49-84, 88, 89, and 95-97 are withdrawn. The previous 35 U.S.C. 103 rejections of claims 49-97 are withdrawn in light of Applicant's statement regarding obligation of assignment.

Claim Objections

2. Claim 84 objected to because of the following informalities: In claim 84, "N,N'-hexane-1,6-diylbis (3-(3,5-di-ter-butyl-4-hydroxyphenyl)propionamide))" should be "N,N'-hexane-1,6-diylbis (3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionamide)); a tertiary butyl group is abbreviated tert-butyl, not ter-butyl." Appropriate correction is required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thornton*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. **Claims 49-67, 69-73, 75-77, 82, and 84 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 and 21-30 of Donetti et al. ("Donetti", U.S. Patent No. 7155094) in view of Vyvial et al. ("Vyvial", US 4493807).**

5. Regarding claim 49, claim 1 of Donetti claims all the features of the water-soluble polymer material but is silent as to the process. Vyvial teaches an extrusion process for extruding vinyl alcohol polymer material using a multi-screw extruder at a temperature of between 80° and 200° C and by adding plasticizers at points between the feed point of the vinyl alcohol polymer and the melting and homogenization zone. Vyvial teaches the point at which the additives are fed depends primarily on the type of additives. See Vyvial, col. 3, line 52 to col. 4, line 26.

6. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the process of Vyvial to extrude the water-soluble polymer material of Donetti as Donetti teaches a vinyl alcohol polymer and Vyvial teaches a process of extruding a vinyl alcohol polymer.

7. Regarding claims 50-67, 67-73, 75-77, 82, and 84, claims 2-19 and 21-30 of Donetti claim the same subject matter.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 49-81 rejected under 35 U.S.C. 103(a) as being unpatentable over Anelli et al. ("Anelli", US 2002/0041744) in view of Vyvial et al. ("Vyvial", US 4493807).

11. Regarding claim 49, Anelli teaches a water-soluble polymer material (see abstract) comprising a vinyl alcohol / vinyl acetate copolymer (see para. [0127]) having a degree of hydrolysis of between about 50% and about 95% (see para. [0128]), which encompasses the limitations claimed. Anelli also teaches that it is preferable to add plasticizers in an amount of about 1% to about 30% by weight of the water-blocking material (see para. [0156]). Among the list of suitable plasticizers provided by Anelli is a plasticizer with a melting point of 50-100° C (para. [0156]; trimethylolpropane <MP = 59° C >) and a plasticizer with a melting point equal to or higher than 140° C (para. [0156]; pentaerythritol < MP = 260.5° C >). Anelli does not expressly teach the two plasticizers are present in an amount of 10-30 and 1-10 parts by weight per hundred parts by weight of the copolymer. However, Anelli teaches the amount of plasticizer added to the

polymer material is appropriately varied depending on the desired mechanical properties of the water-soluble polymer material (see para. [0158]).

12. Anelli is silent as to the process. Regarding claims 49 and 78-81, Vyvial teaches a process for extruding a vinyl alcohol polymer in a multi-screw extruder. Vyvial teaches the extrusion process is carried out at from 80° to 200° C and the melting zone and homogenization zone of the extruder are at from 120° to 190° C (see col. 3, lines 58-61). Vyvial teaches that plasticizers and/or lubricants are preferably added between the feed point of the vinyl alcohol polymer and the melting and homogenization zone and thermally unstable substances are in general only mixed into the melt (col. 4, lines 22-26). Vyvial also teaches the point at which additives are fed into the extruder depends primarily on the type of additives (col. 4, lines 19-20). One viewing the process of Vyvial would appreciate that it would be an effective method of extruding the water-soluble polymer material of Anelli.

13. As to the first and second plasticizers and their respective amounts, one viewing the range provided by Anelli (about 1% to about 30%) and given the motivation to vary the amounts of plasticizer (to modify mechanical properties) would appreciate that the claimed limitations fall under the same scope. As to the sequence of feeding in different temperature zones, Vyvial teaches individual temperature zones (col. 3, line 8) and that the point at which additives are fed into the extruder depends on the type of additives as discussed above. Vyvial also teaches the melt is discharged at 80° to 130° C (col. 5, lines 27-29), which falls within the limitations claimed. Vyvial teaches the degree of

polymerization can be from 250 to 3000 (col. 2, lines 51-53), which falls within the limitations claimed.

14. Regarding claims 49 and 75-77, Anelli and Vyvial are silent as to the properties of the polymer material as claimed such as complex modulus, ratio of the viscous modulus to elastic modulus, and glass transition temperature. As these properties are associated with mechanical properties of the material and are aimed at achieving the same purpose (for a water-resistant telecommunications cable), one practicing the process of Vyvial as modified by Anelli would appreciate that these properties may be achieved through routine experimentation as Anelli teaches that a material with certain desired mechanical properties can be achieved by varying the amount of plasticizer added to the polymer material (see para. 0158)].

15. Regarding claims 50-52, Anelli teaches the solid and compact element comprises 30% by weight or more, 50% by weight or more, and 75% by weight or more of the water-soluble polymer material (see para. [0028]).

16. Regarding claim 53, Anelli teaches the solid and compact element is a structural element of the cable (see para. [0030]).

17. Regarding claims 54-55, Anelli teaches the solid and compact element is a tubular element comprising at least one sheath comprising the water-soluble polymer material, and that the tubular element is a single sheath substantially made of the water-soluble polymer material (see para. [0030]).

18. Regarding claim 56, Anelli teaches the tubular element is a double layer sheath, the inner layer being made of the water-soluble polymer material and the outer layer being made of a water-insoluble polymer material (see para. [0030]).

19. Regarding claim 57, Anelli teaches the tubular element is a three-layer sheath, the inner and the outer layers being made of the water-soluble polymer material and the intermediate layer being made of a water-insoluble polymer material (see para. [0030]).

20. Regarding claim 58, Anelli teaches the solid and compact element is a buffer tube and the transmitting element is an optical fibre (see para. [0028]; at least one optical fiber disposed inside said cavity and a solid and compact element associated with this cavity).

21. Regarding claims 59-60, Anelli teaches the solid element comprises more than about 75% of a water-soluble polymer material, which is within the ranges claimed (see para. [0044]).

22. Regarding claim 61, Anelli teaches the copolymer has a hydrolysis degree preferably between about 70% and 90%, which is within the range claimed (see para. [0127] and [0128]). Regarding claim 61 and 62, Vyvial teaches the polymerisation degree can be 250 to 3000 (col. 2, lines 51-53), which falls within the limitations claimed.

23. Regarding claims 63-74, Anelli teaches that it is preferable to add plasticizers in order to improve the processability of final flexibility of the cable structure (see para. [0156]). As to claims 64, 65, 66, 69, 70, and 73, Anelli provides examples of suitable plasticizers including glycerol, sorbitol, trimethylolpropane, and polyethylene glycol (e.g.

di- or tri-ethyleneglycol) (para. [0156]). As to claims 63, 67, 68, 71, and 72, Anelli teaches the amount of plasticizer can range from about 1% to about 30% by weight of the water-blocking material (para. [0156]). Given the range provided by Anelli (about 1 to 30%) and the rationale to vary the amounts of plasticizer (to achieve certain mechanical properties) as discussed above, one of ordinary skill in the art would appreciate that the claimed limitations fall under the same scope. As to claims 68 and 74, one viewing the individual temperature zones of Vyvial as discussed above would appreciate that the sequence of addition depends on the properties of the additives (see col. 4, lines 17-26).

24. Claims 82-84 and 95-97 rejected under 35 U.S.C. 103(a) as being unpatentable over Anelli and Vyvial as applied to claims 49-81 above, and further in view of Lupia et al. ("Lupia", US 6228495).

25. Regarding claims 82 and 84, Anelli and Vyvial are silent as to the use of a stabilizer in the polymer material. Lupia teaches a hydrolysis stabilizer compound comprising a chelant group comprising two hydrogen atoms bonded to two respective heteroatoms selected from nitrogen, oxygen and sulphur, said two hydrogen atoms having a distance between each of $4.2 \text{ E-}10\text{m}$ to $5.8 \text{ E-}10\text{m}$, said stabilizer compound being present in an amount of at least 0.75 mmoles per 100 g of the copolymer, and that the stabilizer is N,N'-hexane-1,6-diylbis (3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionamide), also CAS 23128-74-7 (MW 636.96), (see claims 1 and 5; the claimed amount amounts to about 0.47 weight percent whereas the reference teaches 0.05 weight percent to about 1.0 weight percent).

26. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the stabilizer of Lupia in extruding the polymer material as it is very effective towards providing oxidative stability for polyolefin wire insulation as taught by Lupia (see abstract).

27. Regarding claim 83, once again, one of ordinary skill would appreciate that the addition of the stabilizer and the sequence of addition of additives depends on the properties of the additives as discussed above.

28. As to claims 95-97, all of the claimed limitations are addressed in the rejections above (see rejections of claims 49, 68, and 82).

29. Claims 85-94 rejected under 35 U.S.C. 103(a) as being unpatentable over Anelli and Vyvial as applied to claims 49-81 above, and further in view of Marten et al. ("Marten", US 5051222).

30. Regarding claim 85, Marten teaches the multi-screw extruder is a self-cleaning co-rotating fully intermeshing twin screw extruder (see col. 7, lines 4-5).

31. Regarding claims 86 and 87, Marten teaches the multi-screw extruder provides an energy input of at least about 0.27 KW hr/kg and preferably 0.35-0.45 KW hr/kg, which is within the range claimed (see col. 6, lines 31-37).

32. It would have been obvious to use an extruder with the energy input in the ranges provided by Marten as excess energy would have to be removed as "waste energy" and a certain amount of energy is needed to melt the PVOH and shear the crystalline areas in the melt as taught by Marten (see col. 6, lines 31-45).

33. Regarding claims 88-90, Marten teaches the multi-screw extruder has a multi-zone thermally controlled barrel and comprises a thermal control apparatus (see for example, Table 3) and the thermal control apparatus comprises an electrical system for heating and a water system for cooling (see col. 13, lines 15-24).
34. It would have been obvious to control the temperature in the extruder as PVOH is processed in a narrow range of temperatures as discussed above.
35. Regarding claims 91-93, Marten teaches a pressure build-up system followed by a die head are provided at the end of the multi-screw extruder, the pressure build-up system is a tight pitch conveying section in the multi-screw extruder or a gear pump, and a cutting device is provided after the die head (see col. 8, lines 54-66). Regarding claim 94, Marten teaches a dry air cutting system (see col. 8, lines 59-66; passed over chilled... rolls... they are cut).
36. It would have been obvious to build up pressure at the die head to finish the homogenization by shearing to remove any gels or remaining crystalline material (col. 8, lines 54-58). As to the cutting device, it is known in the art to pelletize or cut into strands extruded material for further processing (see col. 8, lines 64-66).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL LEE whose telephone number is (571)270-7711. The examiner can normally be reached on Monday-Thursday, 7:30-5:00, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571)272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. L./
Examiner, Art Unit 1791

/Richard Crispino/
Supervisory Patent Examiner, Art Unit 1791